**Client Proposal:**

**Secure Network Design by NERD CHINET**

**10/2024**

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## Cost Simulation: Secure Network Design by NERD CHINET (in Euros)

**1. Hardware Devices**

- **Core Router: 1 unit @ €1,395 = €1,395**
- **Layer 3 Switch: 1 unit @ €1,116 = €1,116**
- **Layer 2 Access Switches: 5 units @ €372 each = €1,860**
- **Servers (for DHCP, DNS, iSCSI, Radius): 4 units @ €930 each = €3,720**
- **Laptops with Console Cables: 2 units @ €744 each = €1,488**
- **Secured Cabinets: 2 units @ €465 each = €930**
- **Network Cables (acquired via auction): 20 cables @ €9.30 each = €186**

**Total Hardware Cost: €10,695**

**2. Software Licenses**

- **Cisco Packet Tracer: Free (student version) = €0**
- **Radius Authentication Software: Enterprise License @ €279 = €279**
- **iSCSI Software: Enterprise License @ €186 = €186**
- **DNS and DHCP Services: Included with Server OS = €0**

**Total Software Cost: €465**

**3. Labor Costs**

- **Network Design (Planning): 10 hours @ €46/hour = €460**
- **Hardware Setup & Installation: 20 hours @ €46/hour = €920**
- **VLAN, ACL, and Security Configuration: 15 hours @ €46/hour = €690**
- **DHCP/DNS/Radius/iSCSI Configuration: 10 hours @ €46/hour = €460**
- **Testing and Troubleshooting: 10 hours @ €46/hour = €460**
- **Documentation & Reporting: 8 hours @ €46/hour = €368**
- **Presentation Preparation: 5 hours @ €46/hour = €230**

**Total Labor Cost: €3,627**

**4. Additional Services**

- **Maintenance Contract: Annual @ €1,395**
- **Monitoring Contract: Annual @ €1,116**

**Total Service Cost: €2,511 per year**

**5. Miscellaneous Costs**

- **Shipping and Handling (Devices): Estimated @ €279**
- **Office Supplies (Documentation): Printing, etc. @ €93**

**Total Miscellaneous Cost: €372**

## Summary of Costs

- **Total Hardware Cost: €10,695**
- **Total Software Cost: €465**
- **Total Labor Cost: €3,627**
- **Total Annual Services Cost: €2,511**
- **Total Miscellaneous Cost: €372**

**Total One-Time Cost (excluding annual services): €15,159**
**Total Recurring Annual Cost (for services): €2,511**

**Payment Terms**

- **30% due upon signature**
- **30% due at project commencement**
- **30% due at project completion**
- **10% due upon finalization**

**Installation Duration: 10 days**
**Offer Validity: 1 month**
**Contract Duration: 3 years with indexation for each year**

**"Sign to accept."**

**(You Can trust our work we will take good care of you and your network)**

**1. Project Overview**
**Objective**:
Design a scalable, secure, and cost-effective office network with a DMZ and four distinct sectors: Management, Study, Production, and Support. Ensure proper IP allocation through DHCP, DNS for name resolution, and utilize VLAN segmentation, ACL-based security, and centralized services (iSCSI and Radius).

**Key Components**:

- VLAN Segmentation
- ACLs for Security
- DHCP and DNS
- iSCSI Storage
- Radius Authentication
- Static Routing
  **Tools Used**:
- Cisco Packet Tracer

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**2. Network Topology**
**Devices**:

- Core Router
- Layer 3 Switch
- Layer 2 Access Switches (each sector & DMZ)
- Various servers (DHCP, DNS, iSCSI, Radius)

**Sectors (with VLANs and Subnets)**:

- **Management (VLAN 10)**: 192.168.10.0/24
- **Study (VLAN 20)**: 192.168.20.0/24
- **Production (VLAN 30)**: 192.168.30.0/24
- **Support 1 (VLAN 40)**: 192.168.40.0/24
- **Support 2 (VLAN 50)**: 192.168.50.0/24
- **DMZ (VLAN 100)**: 192.168.100.0/24

**Routing**:
Static routing configured on the Layer 3 switch and router.

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**3. IP Addressing and Subnetting**
**IP Address Plan**:

- VLAN 10 (Management): 192.168.10.0/24
- VLAN 20 (Study): 192.168.20.0/24
- VLAN 30 (Production): 192.168.30.0/24

- VLAN 40 (Support 1): 192.168.40.0/24
- VLAN 50 (Support 2): 192.168.50.0/24
- VLAN 100 (DMZ): 192.168.100.0/24

**Servers**:

- **DHCP**: 192.168.100.2
- **DNS**: 192.168.100.3
- **iSCSI**: 192.168.100.4
- **Radius**: 192.168.100.5

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**4. DHCP Configuration**
**DHCP Server**: 192.168.100.2 (located in DMZ)
**DHCP Scope**:

- Management: 192.168.10.100 - 192.168.10.150
- Study: 192.168.20.100 - 192.168.20.150
- Production: 192.168.30.100 - 192.168.30.150
- Support 1: 192.168.40.100 - 192.168.40.150
- Support 2: 192.168.50.100 - 192.168.50.150

**Gateway**: Each VLAN's default gateway is assigned to the corresponding Core Router interface IP (e.g., 192.168.10.1).

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**5. DNS Configuration**
**DNS Server**: 192.168.100.3 (located in DMZ)
**DNS Zones**: Configure domain names for internal devices to simplify network access.

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**6. iSCSI Storage Setup**
**iSCSI Server**: 192.168.100.4 (located in DMZ)
**Purpose**: Provides shared storage for critical files and backups accessible by authorized devices.

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**7. Radius Server Setup**
**Radius Server**: 192.168.100.5 (located in DMZ)
**Purpose**: Provides centralized authentication for network devices, enhancing security by allowing only authorized users to access network resources.
**Configuration**: Core Router with IP 192.168.1.1 and the following credentials:

- Username: Management1
- Password: password
- Client Secret: password

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**8. VLANs and ACLs**
**VLAN Configuration**:

- VLANs 10-50 for different sectors, VLAN 100 for the DMZ.

**ACLs**:
Used to control inter-VLAN traffic. ACLs allow only necessary communication between VLANs and restrict access to DMZ servers. Example configuration:

bash
Copy code

```
Switch(config)# ip access-list extended BLOCK_INTERVLAN
Switch(config-ext-nacl)# deny ip 192.168.10.0 0.0.0.255 192.168.20.0 0.0.0.255
Switch(config-ext-nacl)# permit ip any any
```

**DMZ Security**:
Servers in the DMZ are accessible only through ACLs, acting as a firewall.

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**9. Static Routing**
**Router Static Routes**:
Configured to enable communication between the router, Layer 3 switch, and VLANs.

- `ip route 192.168.10.0 255.255.255.0 192.168.1.2`
- Repeat for each VLAN.

The router is responsible for external routing (e.g., internet), while internal VLAN routing is handled by the Layer 3 switch.

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**10. Scalability**
The network can grow by adding more VLANs, devices, or sectors without compromising performance. The modular design ensures flexibility, and DHCP's dynamic IP assignment streamlines device additions.

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**11. Security Strength**

- **ACLs**: Strict access control to regulate inter-VLAN communication and DMZ access.
- **Radius Authentication**: Centralized authentication enhances security by ensuring only authorized users can access network devices.
- **DMZ**: Isolated critical services reduce the potential for security breaches.

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**12. Cost-Effectiveness**

- **VLAN Segmentation**: Maximizes resource utilization without the need for additional physical routers or firewalls.
- **Centralized Services**: Reduces hardware redundancy, simplifying maintenance.

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**Security Policy Summary**

- **DMZ**: Implemented through VLANs and ACLs for access control.
- **Radius Authentication**: Secure access to network administration.
- **Password Policies**: Enforced for both CLI and enable mode access to network devices.

**13. Secured Cabinets**
Secured cabinets will be installed in the network infrastructure. These will be accessible only to authorized personnel responsible for the management and maintenance of critical network equipment. This ensures enhanced physical access control to sensitive equipment.

**14. Laptops with Console Cables**
Two laptops equipped with console cables will also be provided for local management of the network equipment. These laptops will allow administrators to directly access network devices for configuration or troubleshooting on-site when necessary.

**15. Maintenance and Monitoring Contracts**
We also offer a maintenance contract as well as a monitoring contract to ensure the long-term reliability of the network. These services include preventive and corrective maintenance of the equipment, along with real-time monitoring of the infrastructure. Our offers are competitively priced, providing a comprehensive solution for network security and performance.

**16. Public Auction Purchases**
Thanks to our procurement department, we were able to acquire equipment through public auctions, reducing costs while ensuring high-quality materials. For instance, network cables were purchased at favorable prices, contributing to the overall budget optimization of the project.